NATIONAL COUNCIL ON ELECTRICITY POLICY

Mid-Course Review of Electric Restructuring In the Mid-Atlantic Meeting Summary

Wannamaker Building
Philadelphia, Pennsylvania
September 4, 2003

Welcome and Introduction: **Commissioner Jeanne Fox (New Jersey)**
Ellen Lutz, DOE-Philadelphia Office

I. Recap of 2002 Mid-Course Review: Richard Sedano, RAP

Mr. Sedano stated that the original purpose of the 2002 Mid-Course review was to gather regulators, legislators and industry participants that work on electricity policy issues but never have time to talk directly to each other. The aims were to get past the sound bites and dig deep into problems with electric restructuring, as well as to consider potential solutions. Mr. Sedano mentioned a number of retail and wholesale topics that were discussed at the 2002 meeting, including rate caps, aggregation, default service, price volatility, planning, market incentives, generation adequacy, market power, wholesale market price caps, and risk. From this, Mr. Sedano said that a number of themes that emerged, such as tension between markets and regulations; tension between state and federal regulators; ensuring sufficient investment; ensuring the preservation of "public benefits;" the interaction between gas and electric markets; and multi-state action. Mr. Sedano noted a divergence between attendees who thought electric restructuring was on the right track (support for PJM, lower prices, competition is good) and those attendees who thought electric restructuring was not on the right track (impediments to choice, lack of competition, lack of demand response, differences among states). He closed by stressing the need for regional cooperation, such as within the Mid-Atlantic Conference of Regulatory Utility Commissioners (MACRUC) and between MACRUC and PJM, and better communication with state energy and air quality offices.

II. Wholesale Market Rules: Making Markets Work: The Honorable Nora Meade Brownell, Federal Energy Regulatory Commission

FERC Commissioner Nora Meade Brownell stated that effective wholesale markets need certainty, clear market rules, and market monitoring. She declared that what markets do not need are 120 air traffic controllers. While she urged people to wait for the investigation of the August 14th blackout to run its course, she suspected that lack of communication protocols were at least a contributing factor to the blackout.

Commissioner Brownell was pleased with FERC's recent issuance of a final rule on interconnecting large-scale generators, and on a proposed rule for interconnecting small-scale generators.

Concerning the proposed FERC's Standard Market Design rule, Commissioner Brownell emphasized FERC's interest in including all parties, and she specifically cited RTO Week in October 2001 as an example, when FERC held a week long technical conference on RTO design and operations. Yet "people freaked" when the proposed rule came out, according to Commissioner Brownell, especially in the South and West. Commissioner Brownell said that FERC listened and learned, leading to the release of the White Paper in April 2003, which called for more regional involvement by regional state entities.

Commissioner Brownell believes FERC was unprepared for the California electricity crisis of 2000-01, and feels FERC still does not have the rules to forestall a new electricity crisis that may emerge. She noted that FERC is working with states on market monitoring. She declared that bankers will not invest in the electricity market until clear and understandable rules are established that will result in certain recovery of investments.

Commissioner Brownell decried the existence of "seams" between RTOs, calling them luxury taxes on consumers. Seams are omnipresent with RTOs, noting the existence of seams among the three Northeast RTOs and between PJM and the Midwest ISO.

There are not enough distributed resources in PJM, said Commissioner Brownell, and she believed it is wrong to assume that not enough customers can take advantage of distributed resources.

Commissioner Brownell acknowledged that people want generation adequacy and capacity markets—"they are about insurance"—but worried that no one will pay for it.

On market power, Commissioner Browner stated that FERC needs a new market power test. According to Commissioner Brownell, the answers are RTOs and market transparency, but the challenge is making the rules clear.

III. Panel 1: View from the States: What's Working; What's Not?

President Jeanne Fox, New Jersey Board of Public Utilities

President Fox was pleased to announce that New Jersey's energy efficiency programs have successfully reduced the state's energy consumption intensity, and New Jersey is no longer one of the 25 top energy-consuming states. President Fox said New Jersey has built over 3,000 MW of new generation since 1999, with over 8,000 MW in permitting. She contended that new transmission and demand response are lagging. Even with the state's vibrant energy efficiency programs, energy requirements are increasing 1.5% annually, and 300 MW of generation must be added every year, according to President Fox. She closed by saying they are looking at a potential energy efficiency portfolio standard and tripling their existing renewables portfolio standard (RPS), with a goal of increasing the RPS further to 20% by 2020.

Commissioner Terrance Fitzpatrick, Pennsylvania PUC

Commissioner Fitzpatrick, the Chair of the Pennsylvania PUC, began his remarks by saying that the August 14th blackout prompted him to reassess the condition of the electric industry in his state, as well as the impact of electric restructuring. He supports RTOs and appreciates the good work of PJM. Vibrant electric competition is not present in Pennsylvania and may not be for a while, said Commissioner Fitzpatrick. He reviewed what happened in Pennsylvania. To spur customer shopping for competitive suppliers, the state increased shopping credits, but to pay for that, the state stretched out stranded cost recovery to 2010 for most utilities in the state. As of January 2000, 1/3 of load was buying electricity from competitive suppliers. Wholesale electricity prices rose in late 2000 and early 2001; this was not foreseen. Electricity retailers were faced with high wholesale prices but were competing against fixed retail prices, creating a "squeeze play," according to Commissioner Fitzpatrick. By July 2001, customer shopping went from 1/3 to below 10%, and that is where it is now. Commissioner Fitzpatrick does not expect additional customer shopping until the rate caps come off in 2010.

Despite these developments, Commissioner Fitzpatrick asserted that the lack of vibrant electric competition is a non-issue in Pennsylvania. People are not complaining, and "they are fat, dumb and happy on rate caps," the Commissioner remarked.

Commissioner Fitzpatrick reviewed some other details of electric restructuring in Pennsylvania. On electronic data interface, the Commissioner credited a multi-party collaborative for working through the details. Green power has been a success in Pennsylvania, with over 100,000 customers. Last but not least, consumers in Pennsylvania have saved about $4-5 billion. Commissioner Fitzpatrick noted that Duquesne Light went off rate caps earlier this year, and customer bills dropped 15-20%. He concluded by saying one must examine the balance between keeping electric rates low via rate caps and encouraging investment.

Commissioner Ken Schisler, Maryland PSC

Commissioner Schisler, the Chair of the Maryland PSC and former state legislator, began his remarks by saying that as a newly appointed Commissioner, he has the opportunity to see what went right and what went wrong with electric restructuring legislation that he helped shape and enact into law. Commissioner Schisler prefers to think about what is working and what needs work. Like Pennsylvania, Maryland does not have a competitive market, and the PSC recently extended standard offer service for retail and small commercial customers. Commissioner Schisler did not believe rate caps were below market, but they were low enough that it took away the opportunity for a competitive retail market to emerge. More progress was made in the large commercial and industrial market segment, said the Commissioner.

He remarked that there have not been innovative products or marketing as was expected. Commissioner Schisler also thought that it is ironic that the competitive metering provision in Maryland's restructuring law may be stifling innovation by creating market uncertainty for electric utilities.

Commissioner Schisler also hoped to see competitive green power choices or union choices, but these have not materialized. According to the Commissioner, Maryland did not enact a RPS per se, but a "do no harm" provision for renewables that required utilities to report the level of renewables they have in their mix. He expressed disappointment in how difficult it has been to create an energy verification system, noting that utilities with baseload coal are saying they have nuclear and vice versa, simply by citing PJM-wide system mix numbers.

Customer aggregation was also thought to have more of an impact, according to Commissioner Schisler. He thought the rate caps may have reduced the chances of success for aggregation. He noted that Maryland has opt-in, rather than opt-out, aggregation.

Commissioner Schisler noted that he had concerns about the financial state of energy firms. He thought state credit requirements may be a barrier, and he suggested the National Council look into this. Each state has its own credit standard, and it becomes a "race to the bottom," according to Commissioner Schisler. He asked if it made sense for states to have their own individual credit requirements.

Commissioner Schisler also asked if each state had the right price signal to encourage investment, or if even price signals alone were sufficient. Certainty of investment recovery is important. He also cited NIMBY as an issue, saying legislators cannot see direct benefits of locating new generators in their backyard.

Senator Harris McDowell, Delaware State Senate

Senator McDowell noted electricity rates in Delaware have dropped 7.5%, resulting in $18 million in savings. Electricity rates are frozen until 2006, and he hoped that a competitive electric market would materialize in Delaware by that time. In retrospect, he thought the legislature could have done better on the systems benefit charge; technologies like hydrogen will not get there without help. Senator McDowell concluded by saying the Governor commissioned an energy task force, chaired by former EPA employee Michael McCabe, and their report will be issued in October.

IV. Panel 2: View from the Market: What's Working; What's Not?

Tom Rawls, Green Mountain Energy Company

Mr. Rawls began by calling for retail prices that reflect market reality. He echoed Commissioner Schisler's comment that differing state credit and security requirements are proving to be a barrier to entry for competitive electricity providers. He cited Pennsylvania's requirement of paying a 10% security deposit, as well as paying expected gross receipts tax in advance. He also pointed to New Jersey's requirement that a security deposit of each customer's expected electricity charges for two months be made before participating in state-administered basic service auctions. Doing some quick math, Mr. Rawls estimated this to be roughly $64 per customer. As a result, a $16 million advance would be required in order to aggregate 250,000 customers. Mr. Rawls called for uniform business practices, at least on a regional basis.

Mr. Rawls thought there were good faith efforts to push competitive markets in the region, and he mentioned New Jersey's green power pilot program and competitive default service in Pennsylvania. Still, competitive shopping for electricity is decreasing in the region. Green Mountain is the only residential supplier in every service territory in New Jersey and Pennsylvania. He said customer shopping in Pennsylvania has decreased from 790,000 in 2001 to 310,000 in 2003. The region is facing market uncertainty, and Mr. Rawls asserted that the region must decide whether it wants a vibrant market or rate security.

For green power, Mr. Rawls talked about Niagara Mohawk's program that allows green power marketers to sell green power to customers of Niagara Mohawk, for which the utility takes care of billing. Mr. Rawls believes the program has had limited success, with 7,500 participating customers, or less than 1% of total customers. However, it is a place for green power marketers to "hang out" until a competitive market emerges, said Mr. Rawls. He thought a robust market would consist of 2-4% annual growth in customers for 10 years.

Mr. Rawls recommended several steps for encouraging a Niagara-Mohawk style market for green power, such as allowing marketers to use the utility logo; including billing inserts in customer bills more than once a year; and provider marketers with reasonable

access to account numbers of customers who wish to sign up for competitive electricity service, subject to some security protections.

Laura Manz, Public Service Enterprise Group

Laura Manz of Public Service Enterprise Group, parent of Public Service Electric and Gas Company, spoke next and described her company as a "portfolio" company meaning that the company owns both generation and delivery assets. She praised locational-based marginal pricing as the best pricing mechanism available. She noted that the equivalent forced outage rate in PJM has dropped from 8% to 2%; that there is approximately 30,000 MW of new generation in PJM; and there have been $750 million of transmission upgrades in PJM, two-thirds of which is participant funded. Ms. Manz said that under locational-based marginal pricing, transmission, generation and demand-side response each compete to capture the same economic value. She thought that the disconnect between wholesale and retail prices in some areas was masking the benefits of working competitive power markets. Ms. Manz urged the development of a well functioning day-ahead market that accepts bids from supply and demand resources. She urged that any incentives to "jump start" demand response be kept as short-term as possible, in order to avoid distorting the wholesale power market. Ms. Manz closed by stating that transparent wholesale market prices are the foundation for states to connect customers with market prices, and that retail prices should be based on locational-based marginal prices, at least for larger, price responsive customers.

Ed Toppi, Constellation New Energy

Mr. Toppi of Constellation New Energy said his company serves over 5,000 customers, representing 4,000 MW, in 12 states. His company has been in all competitive electric power markets since 1997, and had revenues in 2002 of over $1 billion. Mr. Toppi noted that Constellation New Energy focuses on commercial and industrial customers.

Mr. Toppi joined the other speakers in praising PJM for offering price transparency and effective risk management, information systems that support retail competition, committees and working groups to address market issues. PJM's sponsorship and support of demand resource programs were also noted. Mr. Toppi thought that the business rules in the Mid-Atlantic region are working well, with electronic data interface, low barriers to entry, and an affiliate code of conduct.

On demand response, Mr. Toppi sees lots of momentum, but demand response is stymied by the lack of market transparency from the pricing of standard offer service (SOS) and provider of last resort (POLR). He believes pricing of SOS and POLR is below prevailing wholesale market prices in many of the region's markets, thwarting development of competitive markets and providing little incentive for consumers to invest in energy products or services. He argued that retail pricing for SOS and POLR must be reflective of wholesale market conditions. Mr. Toppi thought that recent actions

in Maryland and New Jersey to encourage wholesale bidding for standard offer service are hopeful signs.

Mr. Toppi noted that the marketing of electric competitions is not working. Currently, electric competition is always marketed as, first and foremost, lowering customer energy prices, said Mr. Toppi, but it should be touted as providing the right price for everyone. "Right" pricing will help modify consumer behavior such as using electricity demand products and services to better manage electricity costs.

Jeff Bladen, PJM

Jeff Bladen of PJM stated that the challenge is to build an infrastructure to allow electrons to follow the path of least resistance, but at the same time, overlay financial markets to facilitate the trading of dollars. He acknowledged that PJM has not spent time fitting retail and wholesale markets together, and that is effectively his job to ensure that happens. He envisions three markets: wholesale, commercial/industrial, and residential. Mr. Bladen believes commercial and industrial customers will find a way to get the cheapest price.

In discussion after the panel, President Fox said New Jersey had separate wholesale auctions for commercial/industrial customers and residential customers. Ms. Manz said one size definitely does not fit all, and that different customer classes have different needs. She argued that electric utilities should be allowed to participate in competitive markets and competitive auction processes.

V. Luncheon Speaker: Craig Glazer, PJM

Mr. Glazer expressed concern about the state of the electric power industry, calling attention to a crisis of public confidence in the industry. Using a baseball analogy, Mr. Glazer said the industry has had three strikes—the California electricity crisis, Enron, and now the August 14th blackout. On the other hand, he noted that no one said electric restructuring would be easy. He raised concerns that the industry had over promised on electric restructuring, and customers remember.

Mr. Glazer asserted that electric restructuring was not about lower rates—rather the ultimate goal was and remains to shift the risk away from customers onto investors. As a former state regulator in Ohio, Mr. Glazer reminded the audience that customers bore the risk in rate cases. Yet as a result of restructuring, that risk has shifted. Although there were tragic consequences for the employees of Enron, he noted that when Enron fell, there was no emergency rate case as there would have been in the old days—investors took the hit, and Mr. Glazer said the industry should take credit for this.

The August 14th blackout highlighted the need for regional planning and for the development of large RTOs—someone needs to see the big picture, according to Mr.

Glazer. Overall, Mr. Glazer believes the electric industry needs better technology and better energy management systems.

Mr. Glazer asked the audience if they remembered a movie from the 1970s called "Network", where one of the news anchors in the movie asked television viewers to yell out, "I'm mad as hell and I can't take it anymore." Mr. Glazer said there is a lot for the industry, and for the Mid-Atlantic region, to be mad about as a result of the domination of the debate by other parts of the country. . The industry is driven by schizophrenia. The country is divided; NARUC is divided, and the electricity debate is driven by congressman in the West and Southeast, according to Mr. Glazer. The Mid□Atlantic is unfortunately not as widely represented before the applicable committees of Congress as these other states.

Mr. Glazer commented on a number of issues. He decried the push from the Southeast to kill off regional institutions, noting that one only has to pay a filing fee to get a certificate of need for a new power plant in Mississippi. On transmission incentives, Mr. Glazer said a link should be established to rational transmission planning if there are transmission incentives. Otherwise, Mr. Glazer fears transmission may be overbuilt, and a whole new set of stranded costs will be created. Money should not simply be thrown at transmission in the wake of the August 14th blackout, asserted Mr. Glazer. Rather, August 14 outlines the need for regional planning processes that are open, transparent and comprehensive.

Many in the industry are calling for mandatory reliability standards, but Mr. Glazer urged caution and reminded the audience that the devil is in the details. For example, will states be forced to participate in a mandatory NERC proceeding in order to address their reliability concerns?

Mr. Glazer made the following suggestions for Congress. He urged Congress not to cut FERC off at the knees, but give the Commission the enforcement authority it needs, even if regions do not go to competitive markets. He also implored Congress not to tie FERC's hands to move regionally, or to tie the hands of regional institutions like PJM. He acknowledged the desire of many to protect native load customers, but he asserted that no one ever defines what native load is. He thought Congress should simply make a statement that native load should be protected but nothing more. Otherwise, Mr. Glazer believes Congress becomes a system operator. He reiterated that transmission incentives should be tied to a regional transmission planning process, and he urged that Congress provide that in the development and enforcement of reliability standards, Congress should allow for deference to regional solutions in all parts of the country and not just in the western interconnection.

VI. Panel 3: Reliability and the Role of Distributed Energy Resources and Demand Response Programs

Susan Covino, PJM

Ms. Covino described the role of demand response as providing a poor substitute for end-users that can see market based prices and respond to them. She said demand response programs are a transitional mechanism that must be provided incentives while the bridge between technology and market design is built.

Ms. Covino said PJM has tons of data, but it is hard for customers to sort through. Ms. Covino also acknowledged that demand response is new to PJM, and they do not have a deep understanding of demand response just yet. PJM is studying what markets can demand response meet and participate in, as well as how to effectively measure demand response. PJM is also surveying its Load Serving Entities to determine the amount and kinds of price responsive load that exist in the PJM footprint but are not participating in the PJM programs.

She discussed the demand response programs that PJM has. The oldest is active load management, dating back to 1991. PJM gives capacity credits to Load Serving Entities for load reduction as part of this PJM administered program. The newer programs are emergency and economic. Under the emergency program, customers are paid $500/MWh or locational-based marginal price, whichever is higher, when PJM requests customer load reductions during an emergency. Under the economic program, market participants receive the locational-based marginal price for load reduction, minus the retail generation and transmission charges of the customer's load-serving entity when the locational marginal price is less than or equal to $75 per MWh. When the locational marginal price exceeds $75 per MWh, then PJM pays the locational marginal price for the load reduction. For both programs combined, there are 332 sites accounting for 1,347 MW, or about 2% of PJM's all-time peak demand. A fourth and final program is a pilot program for non-interval metered customers.

Ms. Covino described several challenges ahead for demand response in PJM. First, what happens with demand response in 2005 and beyond. Second, she noted that PJM, the NY ISO, and ISO New England are working on a regional resource adequacy model for all three institutions, and how will demand response fit in that. Third, FERC has ordered PJM to implement an economic transmission expansion process, and Ms. Covino is unsure how demand response fits in that. Fourth, PJM is looking at the role of demand response in resolving market power problems in load pockets. Finally, PJM has a behind-the-meter working group that could overcome some institutional barriers for demand response and distributed energy resources.

Ms. Covino ended her remarks by noting that Joe Bowring, the PJM Market Monitor, has set a goal of 50% of customers in each customer class being able to see market based prices and being able to respond to those market based price. She also urged the

audience to review the IEEE 1547 standards for distributed energy resources that were recently issued.

Brad Johnson, Consultant to Oak Ridge National Laboratory

Brad Johnson spoke about a report he prepared for the U.S. Department of Energy aimed at quantifying the potential revenue stream for distributed resources in PJM. He specifically looked at Choptank Electric, a rural cooperative in Maryland with a 200 MW peak load. Choptank has its own distributed resources program that includes 400 poultry farms with an average 100 kW of distributed generation at each farm. Farmers save about 30% under Choptank's program, and Choptank's summer peak has been reduced by about 10%. However, Choptank recently opted into competitive electric markets in Maryland, and the utility is considering ending the distributed resource program. Mr. Johnson hypothesized that PJM's distributed resource programs, as outlined by Ms. Covino, would be more beneficial to farmers than Choptank's program. Choptank is in a transmission-constrained area of PJM, so energy prices should be higher; the distributed generation should receive revenues from PJM's capacity market, and receive revenues for providing ancillary services. However, Mr. Johnson's analysis that showed for 2002, PJM would have provided less revenue for distributed generator than Choptank's program—80% less from PJM's load response programs and about 10% less than from wholesale markets. Mr. Johnson attributed these results to the PJM markets being workably competitive and effectively "raising the bar" for distributed generators. He also said the congestion premiums that distributed generators would receive for being in a transmission-constrained area are not sufficient to make distributed generation economic. Specifically, Mr. Johnson said the cost of distributed generators at Choptank is $88/MWh, and PJM energy market prices rarely got that high in 2002. Moreover, PJM's markets are quite complex and difficult to learn, and Mr. Johnson was uncertain as to who will play the role of aggregating distributed generators, such as those owned by the poultry farmers.

VII. Panel 4: Energy and Market Tools to Encourage Clean Energy

Roger Clark, Pennsylvania Sustainable Development Fund

Mr. Clark described both the Pennsylvania Sustainable Development Fund and the Clean Energy States Alliance. The Pennsylvania Sustainable Development Fund (www.trfund.com/sdf) was created by PECO's electric restructuring implementation case and has a $32 million budget for renewable energy, energy efficiency and advanced clean energy. The Clean Energy States Alliance (www.cleanenergystates.org), formerly known as the Clean Energy Fund Network, consists of 17 state clean energy funds, and has a $550,000 annual budget. Nationwide, Mr. Clark noted that state clean energy funds have about $3 billion between 2000 and 2011 for investments in renewable energy, energy efficiency and advanced clean energy technologies. According to Mr. Clark, the

common tools these funds use include grants, loans, subordinated debt or other near-term equity investment strategies, direct equity investments, capital buy-downs, production subsidies, project financing, bulk purchases, and business development assistance.

Mr. Clark said that most, but not all, of the state clean energy funds came from state electric restructuring laws, and are managed by a variety of entities, including state agencies, utility companies and nonprofit organizations. Mr. Clark pointed out that some of these funds rely primarily on subsidies and grants, while others are managed more like venture capital funds, expecting a return from most of their investments. In addition, Mr. Clark said that these state clean energy funds also differ in which clean energy technologies they support.

The state clean energy funds are new and unusual entities, asserted Mr. Clark. He emphasized that these funds work at the state and regional level, not federal. They also see their mission as encouraging technological innovation within the discipline of the marketplace. In other words, the goal is to build sustainable market activity with private and public capital and not to simply throw money at a technology or a project, said Mr. Clark.

Turning to the August 14th blackout in the northeast, Mr. Clark believes that distributed generation is the key to a secure and resilient grid. He argued that the design of the grid, i.e., to move large blocks of power great distances to demand centers, a fundamental flaw. Moreover, Mr. Clark questioned whether the grid could ever be adequately hardened and the prohibitive cost of that approach.

Mr. Clark also thought it was time to reexamine net metering, such as what technologies are eligible, at what capacity size and for what customer classes. He also noted the need to carefully assess the time and cost of interconnection. The provisions people thought were reasonable several years ago need to be revisited and improved. He closed by noting that the recent attention on distributed generation would not help unless the new systems were renewable and clean instead of simply more diesel gen-sets.

Mike Winka, New Jersey Office of Clean Energy

Mr. Winka, Director of the Office of Clean Energy within the New Jersey Board of Public Utilities, pointed with pride to New Jersey's purchase of 12% green power for their state load. According to Mr. Winka, the state green power purchase encompasses 85 state agencies and amounts to 86,000 MWh. Mr. Winka also summarized the New Jersey RPS task force that convened in spring 2002. The task force recommended that the RPS for "Class 1" resources (wind, solar, wave energy, tidal energy, geothermal, landfill methane, sustainable biomass, and fuel cells) be doubled to 4% in 2008, and that a goal of 20% renewable energy be set for 2020. Mr. Winka said that the RPS task force also called for 120,000 MWh set-aside (i.e., about 90 MW) for photovoltaics within the RPS. The annual cost of these recommendations should amount to no more than $1 per household per year by 2004, and to $11 per household per year by 2020, according to

Mr. Winka. He also spoke about the RPS task force's recommendations for a certificate tracking system, an alternate compliance payment for entities that cannot comply with the RPS, and aggregating on-site customer renewable energy generators for meeting the New Jersey RPS. Mr. Winka said draft rules for increasing the RPS will be issued in October.

Mr. Winka then turned to other activities of the New Jersey Office of Clean Energy. His office and the New Jersey Economic Development Agency will be leading a $60 million renewable energy financing effort that consists of $45 million long-term bond financing; $10 million for on-site energy efficiency and renewable energy projects; and $5 million for innovative renewable energy projects.

Overall, Mr. Winka said the New Jersey Clean Energy Program collects $124 million, with fund investments and activities resulting in $383 million in annual lifetime savings. According to Mr. Winka, the cost to each household is about $10-20 annually. Annually, the fund's activities have saved 272,764 MWh and 14,662,740 therms. Overall, the fuel's activities has saved 4,106,226 MWh and 279,373,240 therms overall, at a total cost of $0.03/kWh and $0.17/therm. He remarked that the fund is turning more to loans and away from incentives for their activities.

Other tools in the state toolbox, said Mr. Winka, included green buildings, a greenhouse gas reduction goal, and energy codes and appliance standards. His office will soon be working on a proposed energy efficiency portfolio standard for distribution utilities.

John Hanger, PennFuture

Mr. Hanger asserted that much more has gone right with electric restructuring in Pennsylvania than has gone wrong. Electricity prices in Pennsylvania are the same now as in 1996, and in Pittsburgh, prices have gone back to 1981 levels. He harkened back to the "good old days" when electricity rates in Pennsylvania varied by as much as 100%; the state's average electricity rate was 15% above the national average; multi-billion dollar nuclear plants were place into rates over consumer opposition; and there was little or no utility spending on energy efficiency and renewable energy.

Turning to present times, Mr. Hanger noted that budgets for low-income customer assistance have nearly quadrupled from pre-competition levels, and new gas generation is being developed within PJM that is twice as efficient as older coal plants and 99% cleaner on NOx and SOx emissions. Mr. Hanger also pointed to the four Pennsylvania sustainable development funds, and several wind projects that are on-line or under development. He also noted that record peak demand was met in the summers of 1999, 2001 and 2002 without incident, and that the forced outage rate of power plants in PJM has decreased by 50% since 1996. That alone is the equivalent of 1,500 MW of capacity, said Mr. Hanger. He remarked that nearly 8,000 MW of new generating capacity has been constructed in PJM between 2001 and 2003, and that generating capacity in PJM will exceed projected electric demand and reserves until 2007. Mr. Hanger said nearly 2,756 MW of load has switched to competitive suppliers in Pennsylvania, and consumer

savings totaled $4 billion by 2001 from rate cuts and savings from shopping for competitive suppliers.

He closed by outlining some needed reforms, chief among them the promotion of demand response through the deployment of time-of-use meters in all premises over a reasonable time period. Mr. Hanger also called for policies facilitating customer aggregation through municipalities. He urged that PJM's capacity market be replaced with a requirement that PJM or a distribution company annually review generation adequacy over a three-year period, and if capacity needed, to conduct an auction for new generation. Mr. Hanger said all resources, including demand response, distributed generation, and central plant generation, should be able to bid. Finally, Mr. Hanger called for a RPS of 10% renewables by 2012.

VIII. Wrap-Up and Adjourn